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THE GROG

A Journal of Navy Medical History and Culture



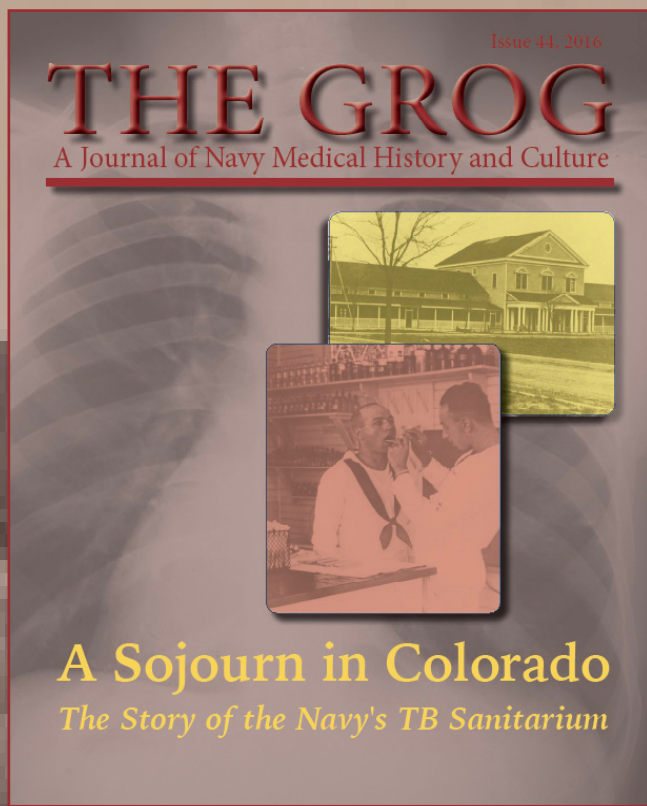
A Sojourn in Colorado

The Story of the Navy's TB Sanitarium

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Collage featuring an X-ray of a tubercular patient's lungs, postcard image of Naval Hospital Fort Lyon, Colo., and Hospital Corpman taking a throat culture from Sailor.

BUMED Archives

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Introduction

From the end of the nineteenth century to the start of the "Great War," tuberculosis, aka "TB," was the second leading cause of death in the U.S. Navy, just after drowning. Across the United States, the TB contagion regularly killed one in every ten Americans and in 1900 alone combined with pneumonia, dysentery and enteritis to account for one out of every three deaths in this country. There is no denying that TB was a public health threat for this nation and throughout the world. But before the advent of antibiotics, very little could be done to eradicate the disease.

In the early twentieth century the U.S. Navy Medical Department sought new measures for treating its TB population. Partly inspired by the work of a tubercular physician in the Adirondack mountains and a new method of treatment he popularized, the Navy established a special hospital in a landlocked state that served only tubercular Sailors and Marines. In our cover story we look back on the history this institution, Naval Hospital Fort Lyon.

We follow this story with an eclectic lineup of articles from the latest installment of our "year in review" series to a look back at the problem of "Paddy Foot" in the Vietnam War. In our oral history section we present first-hand accounts of independent hospital corps duty in the South Pole and the curious, but true tale of how a sigmoidoscope was used to save a disabled aircraft carrier.

As always, we hope you enjoy this tour of the high seas of Navy Medicine's past!



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THE GROG

A JOURNAL OF NAVY MEDICAL HISTORY AND CULTURE

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Main Building, Naval Hospital Fort Lyon, ca. 1910
Author's Collection

A Sojourn in Colorado

AS ANIMAS, COLO.

The Story of the Navy's TB Sanitarium

"Most of the patients—about 60 percent—that have come to us thus far are advanced ones. We keep them until they are cured, in which case they will return to the service, or until they desire to leave. It makes no difference how long the patient has served in the navy. Once a man has entered the naval service, he will be taken care of so long as he is incapacitated."

~Surgeon Barton Lisle Wright, USN in 1908¹

"Patient A" is 26-year-old machinist's mate who has served in the Navy for two years. While aboard a station ship at Guantanamo Bay, Cuba, Patient A contracts a cold which persists with a considerable cough and some chest pain. Over the next month Patient A's cough remains and he begins to lose weight. He is sent to the Naval Hospital Brooklyn where doctors discover diminished resonance in both lungs, a small swelling on the right side of his tongue, and a large number of tubercle bacilli in his sputum. He is diagnosed with pulmonary tuberculosis. On October 26, 1907 the Navy transports him to Southeastern Colorado where it had just opened a state-of-the art TB sanitarium called "Naval Hospital Fort Lyon."²

Before the advent of antibiotics, tuberculosis or "TB" was one of the deadliest infectious diseases in the United States. At the start of the twentieth century the disease regularly killed one in every ten Americans. Over the late nineteenth and early twentieth centuries, TB was the second leading cause of death in America with only pneumonia taking more lives. Together with pneumonia, dysentery and enteritis, TB accounted for one out of every three deaths in the country in 1900 alone.³

The most pernicious form of TB is pulmonary tuberculosis, a disease marked by chest pains, fatigue, weight loss, fever, wheezing, and a persistent cough often marked by the appearance of blood.⁴ For many sufferers, it seemed that they gradually wasted away or were

1. "In War on Phthisis: Governors who fight plague to help open congress." *The Washington Post*; Sep 17, 1908; p1.

2. Wright, Barton. Statement dated March 1, 1908. 114636. RG 52, NARA.

3. Achievements in Public Health: Control of Infectious Diseases, 1900-1999. (<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4829a1.htm>, accessed December 31, 2015)

4. "Tuberculosis," Centers for Disease Control website (<http://www.cdc.gov/tb/topic/basics/default.htm#tbSymptoms>, accessed on December 31, 2015)

consumed by their own bodies, hence the term “consumption” or “consumptive.” As an airborne infection that can easily be transmitted in the simple acts of coughing, sneezing, or speaking it is no wonder that TB was such a common menace throughout densely populated environments of the turn-of-the-century—from booming cities to ship companies in the Navy. From 1895 to 1905, TB annually affected about five percent of the Navy and Marine Corps. In 1905 alone there were 243 cases or 6.1 for every 1,000 men in the Navy and Marine Corps. During these years, TB was the second leading cause of death in the Navy, just after drowning.⁵

Scary but true, before the advent of antibiotics in the 1940s, there was very little that could be done for tubercular Sailors and Marines. In naval hospitals at the turn-of-the-century, tuberculars were often referred to as the “incurables” and prior to 1902, the Navy typically discharged or “invalided” chronic consumptives to civilian life. As Rear Adm. Presley Rixey, the Surgeon General of the Navy (1902-1910), wistfully reported in 1903, the Navy was forced to turn them loose “to menace their home communities and to drag out their unhappy and short-lived existence as best they might.”⁶ For Rixey and other physicians in the Navy Medical De-

partment, the limited options for these incurables was unsatisfactory. Their solution to the Navy’s TB problem rested on the establishment of a new type of special hospital that could offer the best treatment available while safeguarding other patient populations from contagion—the sanitarium.⁷

The Sanitarium Movement

In the 1880s, as the bacteriologist Robert Koch was identifying the TB pathogen (*Mycobacterium tuberculosis*), Dr. Edward Livingston Trudeau was establishing the first TB sanitarium in the United States. Meaning a “place of healing,” sanitariums were typically health-resorts that afforded patients with long-term illnesses—usually TB—plenty of rest, a nutritious diet and most importantly, fresh air. The sanitarium model was built on the theories of physicians like Dr. Hermann Brehmer⁸ who espoused systematic exposure to “open air” or “clean air” as a treatment for pulmonary tuberculosis. Dr. Livingston not only used this model to remedy his own tuberculosis but also to found the Adirondack Cottage Sanitarium in Saranac Lake, N.Y. in 1885. Located in a secluded mountain town, Livingston’s sanitarium would become a model institution offering its exclusive clientele seclusion and plenty of cold, fresh

What's in a Name?

Tuberculosis is an ancient disease and one of the deadliest in the history of mankind. In the 5th century BCE, Hippocrates described it as the most common illness of his day. It has been known by many names, scrofula, phthisis, and graveyard cough. In the 19th century the pulmonary form was termed “Consumption” because the “wasting away” was seen as the body “consuming” itself. The German naturalist and professor of medicine Johann Lukas Schönlein coined the term “tuberculosis” in 1839. Derived from the Latin “tuberculum,” meaning “small, swelling bump or pimple” and referring to the tubercular lesions.

mountain air. Over the next decades, Livingston would achieve renown as one of the leading TB specialists in the country and his Saranac Lake sanctuary would be visited by the likes of such famous tuberculars Robert Louis Stevenson, baseball pitcher Christy Mathewson and gangster “Legs” Diamond.⁹

It was in the first decade of the twentieth century that the Navy began looking at establishing its own sanitarium. Beginning in the Fall of 1902, the Bureau of Medicine and Surgery (BUMED)

5. *Annual Reports of the Surgeon General of the U.S. Navy, 1895-1917.*

6. Rixey, Presley. “Naval Sanitarium for Treatment of Tuberculosis.” *Report of the Surgeon-General, U.S. Navy, 1903.* Washington, DC: Government Printing Office, 1903.

7. “White Plague in Navy: Consumption growing more prevalent among men.” *The Washington Post*; Nov 3, 1906. p5.

8. Dr. Hermann Brehmer (1826-1889) was a German physician who espoused the treatment of tuberculosis through exposure to fresh mountain air and a healthy diet. Brehmer found his own TB to be cured after living in the Himalayas.

9. Rugoff, Milton. “What Bartok and Legs Diamond Had in Common.” *The New York Times*; April 6, 1986 (<http://www.nytimes.com/1986/04/06/books/what-bartok-and-legs-diamond-had-in-common.html?pagewanted=all>, accessed on January 4, 2016)

directed that all naval hospitals temporarily transfer selected TB patients to Fort Bayard, New Mexico, where the Army had recently established a special hospital for these cases. This relieved the immediate situation but when Fort Bayard became overtaxed, the Navy sought out a more permanent solution.

In December 1903, BUMED established a small TB camp (so called "Navy experimental camp") in Pensacola on the north side of the harbor and a mile west of the Navy Yard. Serving as an annex to Naval Hospital Pensacola, the 21-tent facility was a stop-gap measure at best. The facility lacked proper sewage and sanitation (imagine one latrine for about 40 patients!), dependable water supply, and also was whim to hurricane season.¹⁰ On September 26 and 27, 1906, the deadly "Mississippi Hurricane" swept through Pensacola destroying the TB camp. Afterwards, TB patients would no longer be sent to Pensacola for treatment.

Presley Rixey reported to the Secretary of the Navy that, "Throughout all these years the Bureau never lost sight of its aim or abandoned the hope that the service would possess an ideal sanitarium for the proper care of the tubercular sick."¹¹ In 1906, Rixey designated Surgeon J.G Field, USN for special duty to ascertain the best site for a naval sanitarium.



TB Patients at Army Special Hospital
Courtesy of the National Library of Medicine

Fort Bayard, A Description of Treatment for TB at the Army Special Hospital

It is simply living in the open air night and day, and the utmost care in relation to the sputum and taking the maximum amount of nourishment the patient can stand without disturbing their digestion.

-Patients are divided into three classes—those beyond cure; those in second stage and having constant afternoon fever; and ambulant or cases which have no fever are able to take care of themselves.

-Those beyond a cure are kept in the hospital or infirmary and are fed and cared for by female nurses; administered hyper-alimentation tonics and sedative cough mixtures.

-Care is used to prevent dissemination of bacillus from cough, breath and sputum. Paper sputum cups, cheese cloth handkerchiefs are burned and bedding disinfected in steam sterilizers

-Second class of patients sleep on large verandas and only go inside for meals and toilet. Absolute rest and inaction.

-Third Class-live in tents day and night and go to mess halls for meals. They are not allowed to exercise other than walking, playing croquet, billiards etc. All carry a tin sputum cup inside of which is a paper cup for expectorate. Used paper cups are burned.

10. Every day the excrement would be collected in earthen jars and buried outside the hospital. All the water used for drinking, cooking and bathing was collected rain water. Patients were required collect their sputum in paper or cardboard cups that were collected daily and burned in small stove. *Report of the Surgeon-General, U.S. Navy*, 1904. Washington, DC: Government Printing Office, 1904.

11. *Report of the Surgeon-General, U.S. Navy*, 1907. Washington, DC: Government Printing Office 1907.

Rixey told his physician-scout Field, "Better is it to buy a suitable site than spend money on an unsuitable one located on government land. However, it would seem that among the places mentioned, at least one could be found suitable not only in the matter of climate, but in other environments which tend to the success of such an institution equally as much as climate will."¹²

Field travelled the country scouting prospective sites in Port Royal and Paris Mountain S.C.; Eagle Pass and Pikes Peak Forest Reserve in Colorado; Fort Apache, Fort Cummings, Fort McRae and Fort Selden, N.M. One location in Colorado proved especially ideal. Field directed Rixey to an old Army reservation located 3,800 feet above sea level on a sandy bluff along the Arkansas River called "Fort Lyon." Field stated that the location offered a mild and dry climate, maximum sunshine and minimum rainfall annually.

Rixey met with officials from the Department of Interior who now owned the property and then worked with the Secretary of the Navy to have President Theodore Roosevelt transfer it to the Navy Medical Department. The Navy acquired the 575.19 acres of old Fort Lyon through Roosevelt's Executive Order dated October 25, 1906. The same order formally established the Naval Hospital Fort Lyon as a "sanitarium for Naval consumptives."¹³

Bent's New Fort

With the end of the Indian Wars, old



Before it became a Navy Hospital, Fort Lyon was trading post and later Army encampment during the Indian Wars. For a time, members of the 9th and 10th Calvaries (aka, "Buffalo Soldiers") and Kit Carson were based at the outpost. Carson died at Army surgeon's quarters at Fort Lyon in 1868. Forever after the quarters would be referred to at the "Kit Carson House."

outposts like Fort Lyon became obsolete and the property had been abandoned on August 31, 1889. For the next 17 years Fort Lyon's old adobe and wooden structures were left derelict until Navy physician James Field "rediscovered" it and recommended its utility as a sanitarium.

The property was originally founded in 1852 as "New Fort Bent" by trader and rancher William Wells Bent (1809-1869). Bent's original Colorado trading post—The Old Fort Bent—was founded twenty years earlier in La Junta, Colorado. It is still standing to this day and operated by the National Park Service.

In 1860, New Fort Bent was acquired

by the Department of War and briefly known as "Fort Wise" before being renamed Fort Lyon on June 25, 1862, after Nathaniel Lyon—the first Union General to be killed in the Civil War.

During the Indian Wars, Fort Lyon would quarter companies of the 9th and 10th U.S. Army cavalries (aka, the "Buffalo Soldiers"). In 1868, the grizzled scout and protagonist of many dime novels, Kit Carson would become one of its most famous inhabitants. Carson spent his last days under the treatment of Fort Lyon's Surgeon H.R. Tilton, dying in the physician's quarters from a "ruptured aneurysm of the aorta" on May 23, 1868. The surgeon's quarters

12. *Report of the Surgeon-General, U.S. Navy*, 1907, p42.

13. *Report of the Surgeon-General, U.S. Navy*, 1907, pp 39-54.

14. "Historical Background of Fort Lyon, Colorado." Veterans Administration Hospital Library, 1965.

would later be known as the “Kit Carson House.”¹⁴

When the Navy medical detachment of Surgeon Thomas Berryhill, Surgeon James Field, Civil Engineer A.L. Parsons, and Pharmacist T.N. Phillips arrived at Fort Lyon on November 17, 1906 they found a property dilapidated from years of neglect, looting, and weather damage. The old adobe structures were missing doors, and windows. In fact, of the 24 buildings on site, only 14 were still salvageable. The irrigation ditch was filled with earth, grass and weeds. Livestock and horses roamed the property and rattlesnakes were found throughout.

Berryhill (1858-1924) would oversee the standing up of the facility and serve as its first commanding officer. A noted bacteriologist and surgeon, Berryhill would later achieve a modicum of fame for pioneering the use of catgut (absorbable ligature) for stitching

Tuberculosis in Naval Service, 1895-1906

<i>Year</i>	<i>Total Cases</i>	<i>Sick Days</i>	<i>Ratio per 1,000</i>
1895	100	5,568	4.57
1896	90	4,865	3.66
1897	115	5,462	3.94
1898	221	5,766	4.29
1899	170	5,437	4.46
1900	283	8,795	5.51
1901	301	11,115	5.43
1902	287	11,852	4.76
1903	451	12,647	6.71
1904	531	23,715	6.68
1905	467	25,765	5.80
1906	467	21,407	4.86

Source: Barber, George. "The Early Diagnosis of Tuberculosis." Sanitary Report, 1915. Record Group 52, National Archives.

wounds in the military.

The Navy physician was perhaps a fitting choice as the first commanding officer of a TB sanitarium. In 1891, Berryhill had been diagnosed with tu-

berculosis. During a 15-month of leave of absence from the service, Berryhill trekked through the wildernesses of Michigan, Colorado and Texas camping along the way and apparently curing himself. He would lay claim that rigorous exercise and exposure to fresh air as the only medicine for TB.¹⁵

Berryhill's first duty at Fort Lyon was to hire a large civilian labor force to clear the land of trash and make temporary repairs to the buildings. Under his engineer's supervision, a tent camp was set up to serve as temporary quarters for personnel and patients. Trees and gardens were planted; the derelict buildings were renovated and remodeled, wells were dug, an irrigation system developed, and a heating system,

Did you know?

Even before the Navy Nurse Corps was established on May 12, 1908, Berryhill wrote to the Surgeon General Presley Rixey requesting permission to hire female nurses (on contract) and thought they could best be utilized at the sanitarium.

"I am very strongly of the belief that female nurses should be employed. I have no criticism to make against our male nurses (Hospital Corpsmen), but for a helpless and dying man no one can take the place of a woman for nurse. If Congress has any sympathy for the Nation's servants it will surely allow you to make use of women nurses at this hospital especially." ~T.A. Berryhill, Jan 15, 1907

15. "Thomas Berryhill Obituary." Evening Star, June 6, 1924. (<http://www.findagrave.com/cgi-bin/fg.cgi?page=gr&GRid=32646786> accessed on January 6, 2016)

power plant, sewers and roads were constructed. Over the next year the hospital was coming into scope and consisted of administration buildings, wards, a storehouse, officers, enlisted and civilian quarters, a bakery, laundry, disinfecting room, commissary store, pump house, reservoir, a barn, farm sheds, and a school house (formerly the “Kit Carson House.”)

In time Fort Lyon would be equipped with the most modern type of X-ray apparatus, and heliotherapy (sun therapy) facilities. During its peak years, the hospital grounds grew to over 1,000 acres of land and comprise a large concrete reservoir, several artesian wells, shady trees, orchards, vegetable gardens, pastures and lawns, beef and dairy cattle, hogs, and fowl. Fort Lyon’s ambulatory patients would be subject to an early form of occupational therapy by working the land. Each day its company of tubercular Sailors and Marines would milk cows, harvest crops and plant and foster vegetable gardens. In time, the hospital would be able to supply its own beef, dairy and produce.^{16, 17}

On January 15, 1907, Fort Lyon admitted its first patient, a tubercular Navy physician named Barton Lisle Wright. Wright was formerly an attending physician at the Navy’s experimental TB camp in Pensacola. At Fort



Postcard of Hospital Stewards Quarters at Fort Lyon., ca 1910. Naval Hospital Fort Lyon was also referred to as Naval Hospital Las Animas due to the proximity to the nearest town

Author’s Collection

Lyon, he was quartered in a tent, given special meals from a family that was boarding the hospital workmen, and received orders as one of the hospital’s physicians.¹⁸

Wright may have been looked upon as the Navy’s secret weapon in the fight against TB. Since his Pensacola days, Wright had been experimenting with the use of mercuric succinimide ($C_8H_8HgN_2O_4$) deep muscular injections for treating patients. He continued these trials at Fort Lyon with volunteers even seeing improvements in

the overall condition of some advanced cases. In 1907, Wright recommended that the treatment be adopted as compulsory at Fort Lyon. In 1908, of the 127 patients being treated at Fort Lyon, 92 volunteered to take the mercury injections.¹⁹

Capt. Charles Hibbett, MC, USN — Berryhill’s successor as commanding officer—reported that:

“We are almost convinced that mercury judiciously applied ... in the treatment of tuberculosis in all its forms. It should be borne in mind that some of

16. CF Adams to Rep. Guy Hardy. March 12, 1932, M&S A12/N22. BUMED Correspondence. RG 52, NARA.

17. Wieber, F.W.F. "The History of the United States Naval Hospital, Fort Lyon Colo., and the Activities of the Naval Medical Corps in the Development of the Hospital for Sanatorium Purposes." *U.S. Naval Medical Bulletin*, Vol. XVII, November 1922, No. 5.

18. Berryhill to Presley Rixey Jan 15, 1907. BUMED Correspondence. RG 52, NARA.

19. "Mercury Consumption Cure: Naval Experimenters Meeting with Success in Colorado." *The Baltimore Sun*; May 18, 1908. p3.

the cases reported were, at the time that mercurial treatment was commenced apparently at death's door and there can be no doubt that their lives were saved."²⁰

Since ancient times, mercury had been used as a "curative" for treating everything from venereal cases to typhoid fever. It was also an ingredient for popular medicines for generations including calomel (mercury chloride) and patent medicines of the late nineteenth century. In today's world where a broken mercury thermometer could lead to a closure of a school, it is hard to imagine physicians proposing ingesting or injecting a toxic mineral into the body; however, similar regimes are to be found at the heart of chemotherapy for cancer. Exposure to mercury has been known to cause psychotic reactions, hallucinations, muscle spasms, diarrhea and a host of other displeasing affects. At the same time, when some diseases like TB proved utterly hopeless mercury more often than not could be turned to as a, dare say, a "Why Not" remedy.

There is no denying that Wright's mercury cure for TB was controversial even in its day. At the International Congress on Tuberculosis held in Washington, D.C., in September 1908, several delegates opposed the idea outright. Dr. H.D. Pease, Director of New

York State Laboratory in Albany, N.Y. wrote that although Wright's use of mercury was intriguing there was no way that it could compare with the accepted treatments of the day. "Many years of research has demonstrated to medical men the world over that tuberculosis in its advanced stages can only be cured by hygienic living, fresh air, good food, &c.," Pease related. "Further than this, no fair test of the effectiveness of any treatment can be had in less than three years. Like the character of this disease, the effect of which in the human system is slow and insidious, the effect of the treatment is necessarily slow and the patient only responds to careful handling."²¹

Wright defended his work and attested that "Tuberculosis victims in the navy have increased rapidly in recent years, for three reasons: First, because doctors now have a better knowledge of what tuberculosis is; second, because of the great increase in the number of enlisted men in the navy, and third, because officials in charge of the recruiting stations have not been so careful in passing recruits on account of the necessity of passing a greater number of men. The percentage of increase of tuberculosis in the navy has not increased."²²

Among the 40 TB patients under Wright's treatment in 1908 included a

patient with an advanced pulmonary lesion in the lower left lobe who was admitted on January 25, 1908. Wright reported that upon arrival his temperature was 103 degrees, pulse 130, respiration 40, weight 106.5 pounds and was thought to be in a "dying condition." After treated by Wright he regained his weight and his health.

Although the treatment was never adopted officially by the Navy, Wright would continue to campaign for mercuric injections over the next decade of his service.

Tuberculosis in the War Years

The rapid increase in the size of the services at the start of World War I and the extra burden thrown upon its recruiting facilities saw increased rates of TB. In 1917, there were 796 cases of TB in the Navy; a year later the number had increased to 2,398, of these 1,189 would be invalided from service.^{23, 24}

By the 1920s, the Navy Medical Department issued new policy on TB set to minimize the infection in the service. Recruits who suffered from the disease in some form were held for a definite period of time, usually six months for medical observation before being sent to sea. All Sailors would now have to undergo physical examination before being transferred or before they could re-enlist. Special attention was paid to

20. "Balk at Mercury: Phthisis Delegates Oppose the Marine Hospital Cure." *The Washington Post*; Sep 23, 1908; p1.

21. Ibid.

22. Wright

23. Barber, George. "The Early Diagnosis of Tuberculosis." Sanitary Report, 1915. RG 52, NARA.

24. Historical Background of Fort Lyon.

"I am of the opinion that we can not give a dose of mercuric succinimid large enough to kill all the tubercle bacilli, because, in this and other known salts of mercury, the organotropic qualities are so high that a poisonous dose is reached before the curative qualities of the drug are rapidly available. I further believe, however, that if a compound of mercury can be found by which we can inject from 2 to 3 grains of metallic mercury without producing the poisonous effects of the drug and at the same time retain its curative qualities, as has been possible with arsenic in salvarsan, that tuberculosis and its allied disease, leprosy, will become matters of medical history."

~Surg. B.L Wright, MC, USN

carefully balanced rations, ventilation aboard ships, systematic physical exercise, and general personal hygiene of all men in the Navy and Marine Corps. Those diagnosed with the disease would be continue to be hospitalized at Fort Lyon.

Fort Lyon continued to serve as the destination for the Navy's tuberculosis patients until 1921. What had began as an answer to the service's TB ques-

tion had gradually developed into its problem. During an inspection of Fort Lyon in 1919, Captain Rand Percy Crandall, MC, USN found the Navy's sanitarium in severe neglect. In a special report to the Navy Surgeon General William Braisted, Crandall wrote: "The first impression produced on arrival at Fort Lyon, after driving over inconceivably wretched roads from the station, was distinctly unfavorable and depressing."²⁵

Crandall found the parade grounds overgrown with a mass of weeds, and the enclosing roadways were grass grown and filled with ruts. The lawns were wholly unkept and neglected, and the buildings were in need of paint. The steps were loose and splintered, the floors, walls, and ceilings stained. Lighting fixtures were broken and around the porches a "motley throng, in every conceivable uniform, wandered at will."²⁶

Dirt, filth, innumerable cigar and cigarette butts abounded. Old wagon bodies, disused farming equipment, metal debris, rotted lumber and overflowing privies swarming with flies littered the reservation. Crandall found the site lacking trees, flowers, music and any amusements. He wrote, "It is almost pathetic to observe the avidity with which ...[the patients] embrace

the opportunity to indulge themselves in various sports and games on the spacious parade ground now made attractive and inviting for their use."²⁷ And most biting he wrote that it hardly seemed possible that "this could be the headquarters of a great Naval Hospital."²⁸

Crandall recommended a "clean up crew," the construction of greenhouses, requisition of new furniture and surgical instruments, and suggested that if the old farm could not be run economically and without improvement to the hospital it should be abandoned.²⁹

Just two years later, owing in part to the prohibitive cost of upkeep and maintenance, BUMED marked Fort Lyon for transfer to the newly created Veteran's Bureau. On October 31, 1921 Naval Hospital Fort Lyon was formally transferred by Executive Order. Its TB patients were relocated to the naval unit at the U.S. Army's Fitzsimmons General Hospital in Aurora, Colo.³⁰

Over the next ninety years Fort Lyon would serve as a Veterans Bureau (later Veterans Administration) neuropsychiatric facility (1922-2001), and a minimum security prison (2001-2011). As of 2016, the old Fort Lyon was still in operation and serving as a rehabilitation facility for Colorado's

25. Crandall, R.P. to William Braisted, August 9, 1919. 132578. BUMED Correspondence, RG 52, NARA.

26. Ibid.

27. Ibid.

28. Ibid.

29. Ibid.

30. Stitt, E.R. to Dr. S.A. Knopf, March 18, 1922. 127130. BUMED Correspondence. RG 52, NARA.

31. Wieber.

homeless population.³¹

Over its 14-year history as a Navy sanitarium, Fort Lyon admitted 5,435 TB patients. Of these 4,474 cases were invalided from the service, 398 were returned to duty, 483 died, eight deserted, and 72 were transferred to other facilities. Collectively, all the cases were hospitalized for 791,033 days.³² The hospital's greatest legacy may have been its role as the Navy's first convalescent or specialty hospital.

The transfer of Naval Hospital Fort Lyon did not mean that the Navy completely got out of the sanitarium business. In World War II, the Navy commissioned several convalescent hospitals across the United States where Sailors and Marines with diseases like TB, rheumatic fever, and sufferers of combat fatigue could receive the best care and medicine around.

Post-war, the Navy would participate in the clinical trials for the first effective drug against TB, streptomycin. The Navy would also institute an effective TB control program using tools like blood tests and tuberculin skin tests (available in the Navy since 1956).

Despite the advances of medical science, tuberculosis today is far from eradicated. In fact the mortality statistics of the twenty-first century eerily resembles those from the early twentieth century. With the rise of drug-resistant strains and AIDS/HIV populations who are susceptible to the disease, tuberculosis has re-emerged as a viable global health threat. TB regularly kills over 4,000 people a day around the world and 1.5 million people a year or one out of every six deaths. The story of TB continues, but the next chapter of treatment has yet to be written. *ABS*❖



Surgeon B.L. Wright, USN (1870-1932)

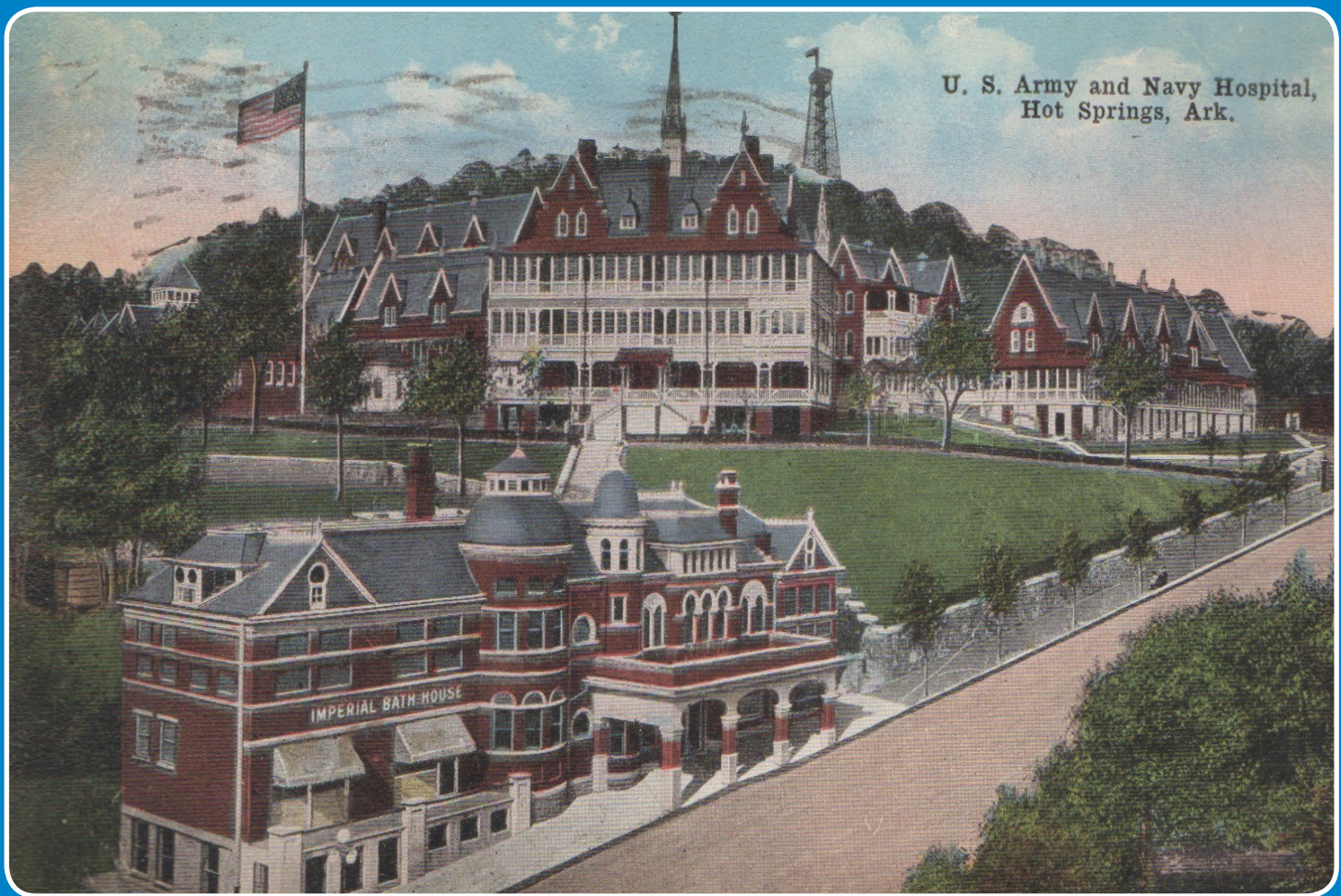
Courtesy of the National Library of Medicine

Wright's Way

In 1908, Surgeon Barton Lisle Wright wrote that "I am convinced that in mercury we have a specific [treatment] ...for tuberculosis and that the only question remaining to be decided is: how long will it take to effect a cure? During the administration of the drug the well-established rules for the treatment of tuberculosis, embracing fresh air, rest, proper food, proper sanitary surroundings, attention to personal hygiene, the avoidance of all excesses of animal appetites and the selection of climate must be carried out."

32. Ibid.

33. Goosby, Eric. "TB the Forgotten Global Health Threat." The Hill, June 9, 2015. (<http://thehill.com/blogs/congress-blog/healthcare/244367-tb-the-forgotten-global-health-threat>, accessed on December 27th, 2015)



Historical Sanitariums of America

From the Latin for a place of health or healing, sanitarium is a name given to institutions used for the treatment of special diseases, most notably tuberculosis in an era before antibiotics. These facilities—part-hospital, and on occasion part-resort—typically offered their patients plenty of fresh air, rest, and in some cases helio (light) and occupational therapies. Below are some of the more notable sanitariums that still exist in the United States.

Adirondack Cottage Sanitarium, Saranac Lake, N.Y. Established in 1885 by Dr. Edward Livingston Trudeau, the Cottage Sanitarium was one of the first institutions used for treatment of tuberculosis through rest and fresh air. The institution was renamed the Trudeau Sanitarium in 1915 and closed in 1954. Although the property is closed to the public today, a number of the original buildings are still standing and tours are available through the Historic Saranac Lake organization.

Army-Navy Hospital, Hot Springs, Ark. Opened in January 1887 on “Bath House Row” in Hot Springs, Ark., the hospital holds the distinction as the first official joint military hospital in the United States. From 1880s through 1940s, hundreds of thousands of Soldiers, Sailors and Marines suffering from rheumatoid arthritis and

other ill patients were sent to Hot Springs for hydrotherapy treatments. The hospital was transferred to the state of Arkansas in 1960 where it was adapted into the Hot Springs Rehabilitation Center. Since 2009, the old hospital has been operating as the state-run Arkansas Career Training Institute.

Battle Creek Sanitarium, Battle Creek, Mich. Founded in 1866 as the Health Reform Institute, the institution was owned and operated by the Seventh-Day Adventist Church. Dr. John Harvey Kellogg served as the Institute's chief medical officer and later its superintendent while espousing principles of exercise, fresh air, vegetarianism, and abstinence from tobacco, alcohol and sexual activities. In 1894, Dr. Kellogg invented what is considered the first breakfast cereal—corn flakes—as a healthy substitute to the typical American breakfast of eggs and bacon. Dr. Kellogg's brother Will Keith (W.K.) used the product to start a company, "The Battle Creek Toasted Corn Flake Company" later known as "Kellogg's."

Dr. John Harvey Kellogg was the subject of a historical novel by T.C. Boyle, *The Road to Wellville* (1993); this was later adapted into a film starring Anthony Hopkins as the eccentric doctor. Kellogg's sanitarium burned down in 1902 and was rebuilt a year later. It was purchased by the Army in World War II and used as a hospital. Still standing, the building is now known as the Hart-Dole-Inouye Federal Building.

Hot Lake Sanitarium, Hot Lake, Ore. Located on thermal springs in northeastern Oregon, Hot Lake was originally established as a luxury resort and sanitarium in 1864. The property was added to the National Register of Historic Places in 1979. Since 2010 it has been operating as a bed and breakfast.

Naval Hospital Fort Lyon, Las Animas, Colo. The Navy's preeminent sanitarium for tuberculosis patients was transferred to the Veterans Bureau in 1921 where it was adapted into a neuropsychiatric hospital. In 2001, the old hospital was transferred to the state of Colorado for use as a minimum security prison. Today, the sanitarium is a rehabilitation facility operated by the Colorado Coalition for the Homeless.

Piedmont Sanitarium, Burkeville, Va. Founded in 1917, the Piedmont was the first sanitarium established for African-Americans suffering from tuberculosis. The facility was in operation until 1965. Two years later it was converted into the Piedmont Geriatric Hospital, which is still in operation today as the only state-run geriatric hospital in Virginia.

Stanley Hotel and Resort, Estes Park, Colo. In 1903, Freeland Oscar Stanley—co-founder of the Stanley Steamer Motor Carriage Company—acquired property in Estes Park, Colorado. The locale's low humidity and dry air were recommended for his tuberculosis. Seeing economic opportunity, Stanley decided to develop Estes Park into a spa town for wealthy elites. The centerpiece was a white palatial 140-room hotel, known as the Stanley Hotel. Still in operation today, it is best known as the inspiration of the book and locale of the film, *The Shining*.

Waverly Hills Sanitarium, Louisville, Kent. Probably best known as one of the most "haunted" locations in America, Waverly Hills is often featured in many ghost adventure shows on television. Waverly began as a hospital for tuberculosis patients in 1910. The sanitarium was closed in 1961 and briefly served as a geriatric center and home to the mentally handicapped. The facility was closed by the state of Kentucky in 1982.

Navy Medical Time Capsule

Remembering the Medical Department in 1966

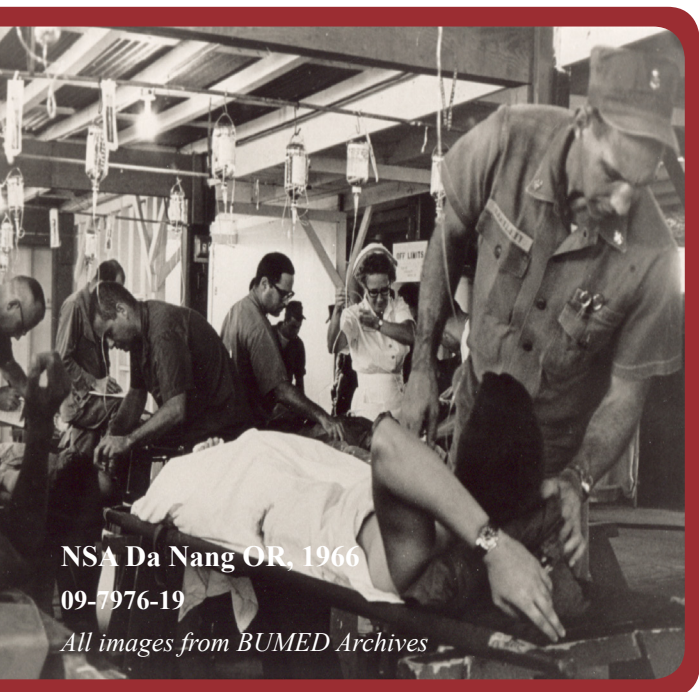
A New Year gives us hope of new beginning and a fresh start; it also gives us another reason to reflect on how far we have come.

Fifty years ago, the United States was in the throes of a war that would define our political and social culture of the time. For the 196.6 million people living in the United States in 1966, a new home would cost you just over \$14,000, and a new car about \$2,000. The price of gasoline averaged about just 32 cents a gallon, the price of a first class stamp was five cents, and the cost for a movie ticket was just \$1.18.

The year was a high-water mark for popular culture. In 1966, “Scotty” first beamed Captain Kirk aboard the Enterprise on the TV show “Star Trek.” Popular movies that year included Sergio Leone’s “The Good, The Bad and The Ugly,” and the Navy-themed classic “Sand Pebbles” starring the “King of Cool,” Steve McQueen as Machinist’s Mate First Class Jake Holman. The year saw the debut of the grapefruit soda Fresca, Scope mouthwash, disposable diapers (Pampers) and Milton-Bradley’s Twister.

The year was also stellar for popular music. The albums “Revolver” (The Beatles), “Blonde on Blonde” (Bob Dylan), and “Pet Sounds” (The Beach Boys) made sure the “vibrations” were good throughout the year.

Literature took a criminal turn in 1966 with the release of Truman Capote’s In Cold Blood. The true crime genre, including recent documentaries “Serial” and “Making of a Murderer,” would owe their very foundation in part to Capote’s crowning achievement. Also, in 1966, Daniel Keyes published Flower for Algernon. The epistolary novel, based on his earlier short story, would find itself on many high school reading lists in the decades to come and was later adapted into the award winning film, “Charly” in 1968.



NSA Da Nang OR, 1966

09-7976-19

All images from BUMED Archives

Fifty years ago, as the nation was embroiled in the war in Vietnam, Navy Medicine was engaged in its mission to “protect the health and promote the physical fitness of Navy and Marine Corps personnel.” In 1966, Navy Medicine was 44,035 members strong and stretched across 25 regular hospitals, 31 station hospitals, 10 research facilities, 10 dental clinics, and four preventive medicine units across the globe. Major medical centers still existed in Oakland, Philadelphia and St. Albans. During the year two Haven-class hospital ships—USS *Repose* and USS *Sanctuary*—were activated for service in the Vietnam theater. Overseas, the new Naval Station Hospital, Naval Support Activity (NSA) Da Nang went into operation. The NSA hospital would serve as the leading trauma facility in theater until it was decommissioned in 1970.

In May 1966, Surgeon General of the Navy Robert Brown was promoted to Vice Admiral, setting a trend for 3-star Surgeons General that continues to this day. Rear Adm. Robert Canada entered his second year as Deputy Surgeon General. Rear Adm. Frank Kyes

entered his fourth year as the Dental Corps Chief. Pearl Harbor witness Capt. Ruth Erickson ended her tour as Director of the Navy Nurse Corps; in May, she was succeeded by occupational therapy nurse, Capt. Veronica Bulshefski. Psychologist Capt. Robert Herrmann was entering his fifth year as Chief of the Medical Service Corps. The position of Hospital Corps' Force Master Chief did not yet exist.

At Navy medical treatment facilities (MTFs), 321,563 patients were admitted in fiscal year (FY)1966. The year saw the rise of the dependent-patient population at naval hospitals. The number of active duty dependents rose in the year from 986,976 (1965) to 1,016,207 (1966). Some 35,311 newborns started their lives at naval hospitals in 1966.

During the year, the war in Vietnam accounted for 3,971 Navy and Marine Corps casualties. Of these, 1,142 died as a result of hostile action (939 killed in action and 179 died after reaching a medical treatment facility, the remainder died while MIA). In Vietnam, 72 Hospital Corpsmen and two Navy physicians were killed in action while serving with Marines.

Throughout 1966, 325 medical officers, 30 nurses, 690 Medical Service Corps officers, 100 dentists, 400 Dental Technicians and 4,000 Hospital Corpsmen were deployed to support more than 140,000 Navy and Marine Corps personnel in Vietnam and with the Seventh Fleet.

The war in Vietnam produced many Navy medical heroes. On March 28, 1966, while serving with the 7th Marines in Quang Ngai Province, HM3 Robert Ingram risked his life by attending to an injured Marine, getting shot three times in the process. While dressing the head of a wounded Corpsmen, Ingram sustained a fourth gunshot wound. Despite this he would survive the ordeal. Thirty-two years later (July 10, 1998), Ingram was awarded the Medal of Honor. Ingram's fellow Corpsmen would be awarded 12 Navy Crosses and 18 Silver Stars for their actions in 1966.

On October 1, 1966, while serving as Chief of Surgery at NSA Da Nang, Cmdr. Harry Dinsmore volunteered to perform a surgical operation that endangered his own life. The patient, a South Vietnamese soldier, had a live 60 mm round stuck within his chest wall that contained between one and two pounds of TNT and a partially depressed firing pin. As Dinsmore later remembered, "The patient was taken to the operating room by stretcher, and I never saw such careful, tiptoeing stretcher carriers. They placed him on the operating table, stretcher and all. He was sedated, given a general anesthetic...intubated and then



Navy Nurse with patient aboard USS *Sanctuary*
09-8148-5

attached to the 'Bird' machine, an automatic respirator." Seeing that the round should not be moved until lifted straight from the chest wall, he made an elliptical incision completely around and away from the mortar shell, lifting the overlying soft tissues directly from the chest wall. Dinsmore completed the entire procedure in about a half hour. The patient returned to full duty status within two-months. Dinsmore would later be awarded the Navy Cross for his courageous devotion to duty. He was one of two physicians awarded the Navy Cross for their actions in 1966.

The year was also marked by great innovation in the Navy medical research arena. In 1966, medical personnel were deployed to the Antarctic collecting medical data and studying pulmonary edema. At Camp Lejeune, researchers investigated a more potent vaccine against the Adenovirus Type 4. During the year, the Navy Tissue Bank (at the Naval Medical Re-



Front gate of NSA Da Nang
09-7973-29

search Institute) developed methods for freeze-drying human tissue—skin, bone and dura—and successfully utilized freeze-dried tissues in reparative surgery. Also, in 1966, a three-person team from the Naval Medical Research Institute would help lead studies on Extra Vehicular Activity (EVA) working underwater with the astronaut and future “moonwalker” Buzz Aldrin.

The year was marked by significant advances in the use of frozen blood. In 1966, Navy medical personnel at the Naval Blood Research Laboratory (NBRL) in Chelsea, Mass., developed new techniques for preserving and storing red blood cells and platelets for use on battlefields. NBRL shipped its first unit of frozen blood cells and plasma to Da Nang during the year where it was stored in the U.S. military’s first combat frozen blood bank. Over the next three years, Da Nang would spearhead a feasibility study of the frozen blood product ultimately using over 2,000 units. Technicians would thaw the product, washing away the glycerol through

a dilutional process, and prepare it for transfusions. The process itself could take as little as twenty-five minutes to prepare. Proving frozen blood was safe, feasible and effective was an incredible military achievement and would help pave the path for further study and additional blood advances.

The Navy Medical Department saw several “firsts” in 1966. In April, Ens. Gale A. Gordon, MSC, USN became the first woman to complete the aerospace experimental psychology training program at the Naval Aerospace Medical Institute in Pensacola. The year also saw the first commissioned occupational therapist in the Navy (Ens. Robert Zila, MSC, USN), the first black submarine doctor (Lt. William Ross, MC, USN) and the enactment of the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS).

The year also marked the end of an era for some. After 52 years as a commissioned officer in the Navy Medical Corps, Vice Adm. George Calver retired. For the previous 38 years of his career, Calver had served as the Attending Physician to Congress—he was also the first person ever to serve in this role. His sage advice to his patients is something we should all carry with us today as we move forward in the year. “Give 5 per cent of your time to keeping well,” advised Calver. “You won’t have to give 100 per cent getting over being sick.” ABS

Ice Runways and Rookeries: Independent Duty in the South Pole

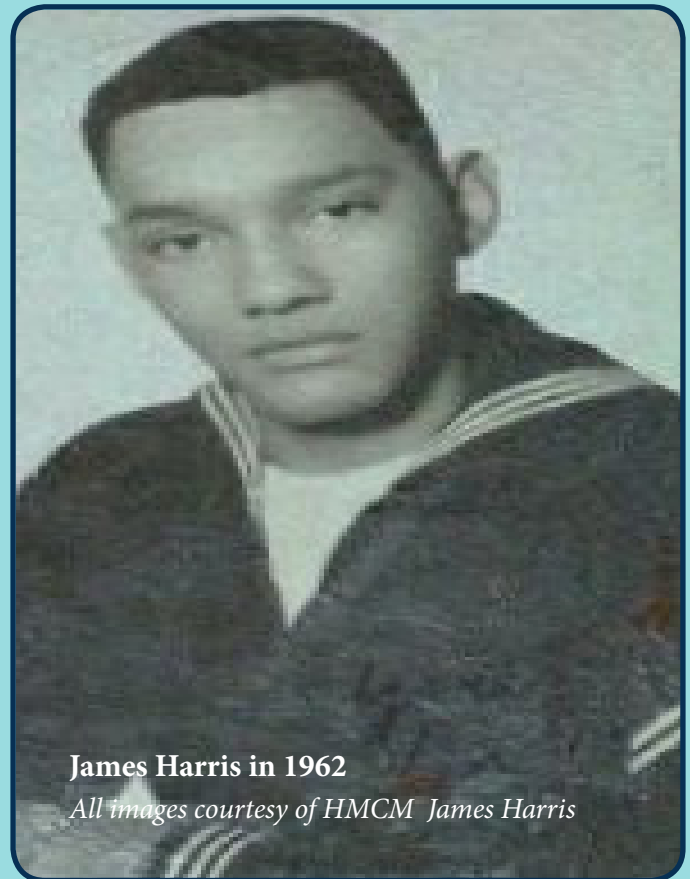
By HMCM (ret.) James Harris, USN

Master Chief James Harris spent thirty years in the Navy (1962-1992) as an x-ray technician, and later as Command Master Chief of Naval Hospital Jacksonville. Early in his career, Harris deployed to Antarctica as part of Operation Deep Freeze¹ serving on independent duty at McMurdo (1967-1968) and later at the Hallett Station² (1968-1969; 1969-1970). In this oral history excerpt, Harris relates some of his reflections of his unique tours in the southern most reaches of the planet. (Source. Oral History with HMCM James Harris, conducted on October 14, 2015. BUMED Oral History Collection.)

I really don't know how I ended up in Antarctica. Leaving the second part of the radiology technician course at Bethesda, we were supposed to go to hospitals where we could utilize the training that we had just gotten. So when Antarctica support activities came up as my next duty station, I just wondered what it was going to be.

At the time Antarctica support activities was located at the Seabee base in Davisville,³ Rhode Island, and I was assigned to the clinic where that had an x-ray room but also an x-ray technician. I had very little x-ray experience before the deployment so I wound up working in the health records section of the clinic. We made sure that the volunteers for Operation Deep Freeze got all of the physicals they needed so that they would be qualified and mentally ready for the challenges of living in isolation for a year.

Before you got deployed to Antarctica you had to pass the physical, but the biggest concern was dental. You had to make sure that they did not have any type of medical abnormalities that would cause a problem



James Harris in 1962

All images courtesy of HMCM James Harris

1. McMurdo Station—research center on the south tip of Ross Island on the shore of McMurdo Sound in Antarctica. It is operated by the United States through the U.S. Antarctic Program, a branch of the National Science Foundation. McMurdo is the largest station in Antarctica capable of supporting over 1,200 residents.

2. Hallett Station—Joint scientific base located on the northern tip of Hallett Peninsula in Antarctica and home to a large Adélie penguin colony.

3. Davisville, RI—Home of the Naval Construction Battalion Center from 1942 to 1994. HMCM Harris was based at Davisville for Antarctic Support Activities from Sep 1967 – 15 Oct 1970.

while they were on the ice. They also had to pass a psychiatric evaluation which determined their stability for duty. We would have to go over all those type of things and if we spotted anything that looked out of the norm, we would take it to the Antarctic support physicians and they would make a determination if this person was fit to be a part of Operation Deep Freeze.⁴

On my deployments, we typically left in September and would go to Christ Church, New Zealand where we were outfitted with our cold weather gear from parkas to mukluk boots. Once you got your winter clothing, you would take a C-121 or C-130⁵ to Williams Field⁶ in McMurdo. These flights normally took about ten hours from Christ Church to Antarctica.

A part of a medical unit would be on our plane, but most of our team would be Seabees and other ratings who were going down for either summer support or wintering over. Winter in Antarctica starts in June so in September you're getting there when spring is turning into summer season. The skies are bright blue and every day is sunny.

During the Antarctic summer you were usually too busy to become depressed because your workday was maybe 12-hours, and you could work long days because the sun was up forever. You kept busy and so you really didn't have time to sit around and be sad. There were always fun things that were going on there.



Navy unit at McMurdo Station, ca. 1967

When I went to Hallett I was trained to do everything that was necessary as an Independent Duty Corpsman with about 18 active duty military people. This was also stressful for a young Corpsman. My best friend at the time was the *Merck Manual*. So, anytime anybody came in with a health problem I immediately referred to the *Merck Manual*, and I figured out how to take care of them. The biggest issue was to ensure people took basic care of themselves. For instance, a problem that can occur in Antarctica is rapid dehydration. If you do not drink water regularly you can actually start dehydrating. Of course, without water through your kidneys and through your bladder you can develop kidney stones, and that

did occur to one of the guys that was assigned to me at Hallett Station. He would drink coffee, but never water or juices. We finally got him to force fluids down and he finally passed that stone. This may appear to have been a small problem but taking a plane out of the rotation for a Med-Evac would have had a great impact on the re-supply schedule. I was very happy when we finally got him to pass the stone, and so was he.

I remember when we landed at Hallett Station and established communications, the plane took off and left us there by ourselves. To get resupplied we had to build an "ice runway." On several occasions I assisted the Seabees in building the runway because

4. Operation Deep Freeze—Codename for a series of U.S. missions to Antarctica beginning with Operation Deep Freeze I (1955-1956) and followed by Operations Deep Freeze II and so on. Given the continuing and constant U.S. presence in Antarctica since that date, "Operation Deep Freeze" has come to be used as a general term for U.S. operations on that continent, and in particular for the regular missions to resupply U.S. Antarctic bases, coordinated by the U.S. military.

5. The Lockheed C-130 Hercules is a four-engine turboprop military transport in operation from 1954 to the present.

6. Williams (Willy) Field is a U.S. airfield at McMurdo Station, Antarctica.

as a Corpsman, unless somebody got sick, you really didn't have that much to do. I would do everything possible to stay busy helping other people as best I could. Once we built the ice runway, we could have redeployments for as long as the ice was thick enough for a plane to land on. If the thickness of the ice got so that a plane could not land we did not get resupplied.

The Seabees would come in and they would survey a landing site and it would have to be 6,000 feet long and 200 to 300 feet wide for the planes to land on it. The Seabee equipment operators would have to come in with a tractor to smooth out the ice and the snow drifts so that planes could land.

While there I worked with one of the smartest chiefs that I have ever known in my whole life; his name was Chief Bak. He taught me just about ev-

everything that I needed to know in the event something happened to him. The ice on the runway needed to be six feet uniformly deep to support a plane. We would drill these holes in the ice to make sure the uniform thickness was at least six feet. Once we'd drill the hole, Chief Bak had devised a system where we would pour oil and antifreeze into the hole that we had dug, and then we would put a weight on one end of the wire, and anchor it at the top. And the wire would be something like ten feet long. We would pull the wire up and as long as the top of the wire was four feet from the surface of the ice we were in good shape, but when it started getting to be five feet from the surface and four feet from the surface we would send messages back to Air Operations at Williams Field near McMurdo telling them that it was unsafe for the planes



Adélie Penguin

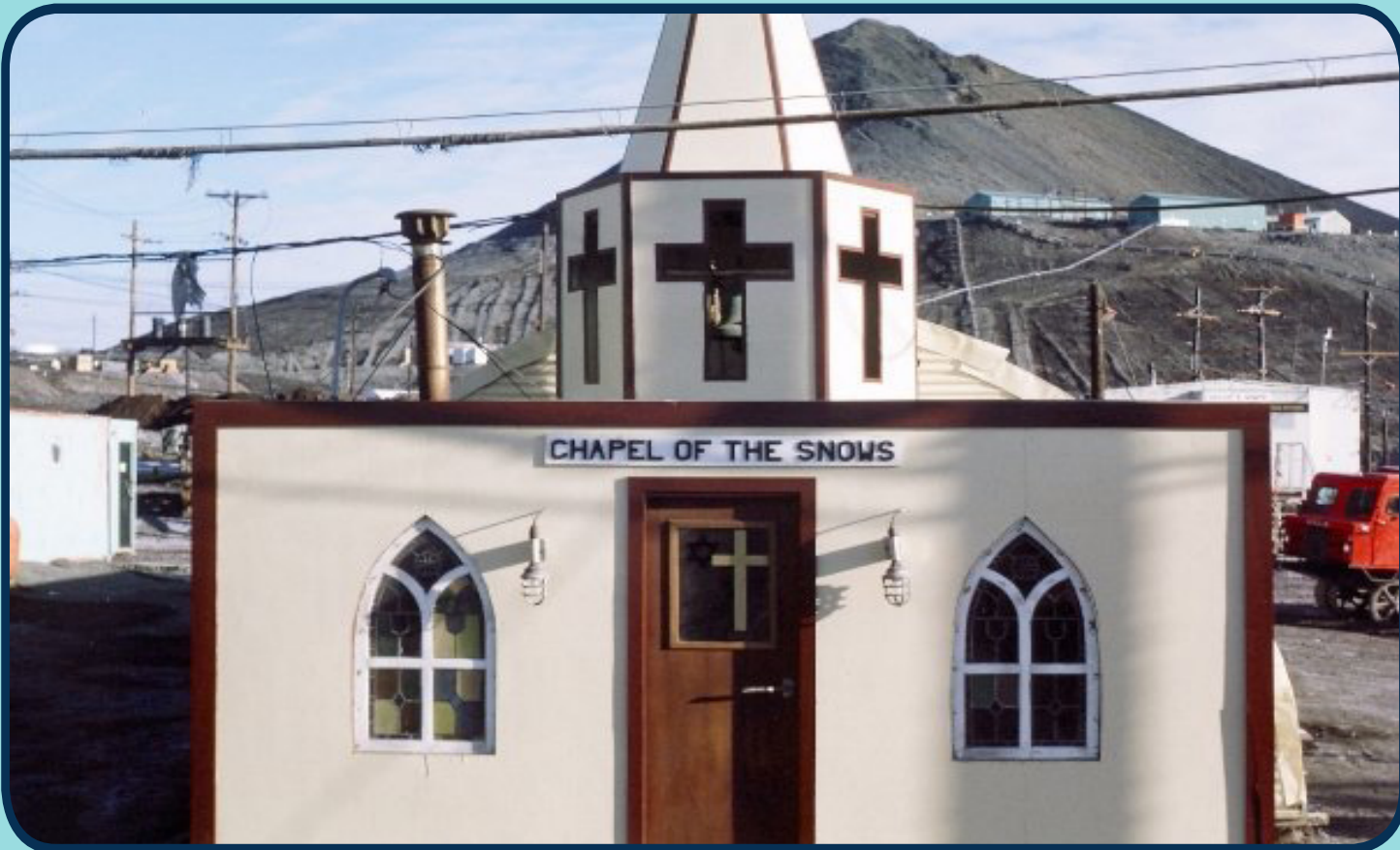


James Harris at Hallett Station

to land on our ice runway. They would then cut off flights to Hallett Station.

Chief Bak didn't let us go out exploring on our own because he knew there were crevices in the ice that inexperienced people would probably not see. On one occasion he found a glacier near Hallett Station that was running pure water. On this glacier we devised a way that we could load up our water buffalos⁷ with pure glacier water and take it back to Hallett Station and then put it into our hot water tubers. Unlike McMurdo and the other stations that took "G.I. showers" where you soap down and rinse off, we did not have

7. Water buffalos—Portable water storage tanks.



that problem. We could actually just stand under the water and take a five-minute shower if need be.

When Chief Bak allowed us to wander around, we would come across some artifacts left by earlier Antarctic explorations. Occasionally we would find remnants of little huts with provisions.

The unique thing about Hallett Station is that it sits on the edge of a penguin rookery. There's Hallett Bay where the station sits and right behind Hallett Bay is an Adélie penguin⁸ rookery. The penguins would start coming in December. One day you would see maybe five penguins, the next day

you would see over a thousand. After that you would see hundreds of thousands of Adélie penguins all over the place building their little nests out of the rocks and getting ready to lay their eggs. They were very noisy, but they were very interesting to watch.

We did a lot of penguin watching, and we would also look out for them. The penguins just seemed to be, can I say? Kind of helpless. There's a predatory bird in Antarctica that preys on penguin young and penguin eggs called a Skua Gull.⁹ This Skua Gull would use all types of techniques on the penguins. They would try to distract the male penguin from the nest so that the other

Gulls could sneak in and steal the eggs. Or if a little penguin would wander away from the group, the Gulls would immediately attack and kill and eat him. So, of course, we nice Americans tried to protect as many of these little penguins as we possibly could, basically, interfering with nature. Our little efforts didn't amount to anything because this was going on 24/7 and we really couldn't make a lasting impact. ☹

8. Adélie Penguin—Native to Antarctica, Adélie Penguins are among the most southerly distributed of all birds.

9. Antarctic or South Pole Skua—type of Gull widespread in the South Pole. Their omnivorous diet includes fish, krill, carrion and penguin eggs and chicks.

How a Sigmoidoscope Saved *America*

By Dr. Tom Minehan

LCDR Tom Minehan, MC, USN was a general surgeon in the Navy who served at the National Naval Medical Center, Bethesda and aboard the aircraft carrier, USS America in the 1970s. In 1976, while stationed aboard America, the ship became disabled when a wrench fell into the turbine. In this instance, as the ship's doctor, Minehan was called in to help. The following is an excerpt of an oral history in which Dr. Minehan details the curious story of how a sigmoidoscope was used to rescue the disabled ship. (Source. Oral History with Dr. Tom Minehan, conducted on July 23, 2015. BUMED Oral History Collection.)

It was a pretty standard day. We were in the Mediterranean, as I recall, and had just gotten there within a week, and we were still in the Western Med. There were three carriers: one spent some of the year in Norfolk being refitted; another one went across and went to the Eastern Med immediately; the one in the Eastern Med came back and spent the second half of the tour in the Western Med, and then when that tour ended they went back to Norfolk and the ship at Norfolk came over and went into the Eastern Med. And as I recall we had just gotten through Gibraltar and really hadn't gotten very far in when my senior medical officer came to me some time in the afternoon and had this wide-eyed worried look on his face. He said, "We have a problem." I'm thinking, okay, somebody just crash landed a plane somewhere and I'm going to get 25 people injured onboard in a few minutes, and I'm worried about that. And he says, "It's a little strange."

I said, "Alright, I'm listening."

He said, "Somebody dropped a wrench into the inside of one of the steam turbines on the ship." There are four of these engines and each of them



USS America (CV-66), A Kitty Hawk-class supercarrier in commission from 1965 to 1996.

are about 25,000 horsepower; they are huge engines, and without them we would not be operational. We couldn't run the engine with this piece of foreign body in there because if it got up into the turbine it could ruin the whole engine and maybe make it explode. Who knows what sort of terrible problem it

would be, so the engine was finished at that point. He said, "Do you think you can get it out?"

I'm thinking, "What am I going to do? How am I going to do this?"

He said, "Come on down and we'll take a look and I'll show you what's going on." So, we went down to the en-

gine room and this steam turbine was a formidable presence; it really was an amazing thing. We went down to the bottom of it and there was a fairly high crawl space that you could get in and crawl under on your back and look up at the bottom of the turbine. They had drilled a hole in the bottom of the turbine that was about two inches in diameter and the casing around the turbine was about two or three inches thick. I'm on my back and I'm looking up into this hole that goes up into this huge engine, and the bottom of the casing was a little like a funnel. It was wide at the upper part of it and then narrowed as you got down to where that hole was, and the hole looked like it was at the bottom point of the funnel arrangement. I looked at it and I put a finger up in there, and I could just barely get the tip of my finger over the inside edge, and I felt around and I couldn't feel anything in there, and I got a flashlight and looked around. They had been trying to get this wrench out of the engine for two days at this point. I got the light and I looked up in there and couldn't really see anything in there. So I'm thinking to myself, maybe I could scratch around with a coat hanger or something and see if I could do anything like that. But I thought, well, I don't know quite what's up in there; I better not be doing that. Suddenly, I wondered if I could get a sigmoidoscope up into that thing. At that time, flexible colonoscopy devices were just barely getting started, and so we were all pretty used to using rigid sigmoidoscopes, which are about a foot long, and they have a light on them so you can see where you are. I went up

and got a sigmoidoscope and grabbed some surgical clamps of various descriptions—some with curves and some straight, and came back down and put the sigmoidoscope in. I'm looking around as best I can. You couldn't get a great angle off to the side, but you could get a little bit of an angle to see off to the side, and I was astonished to see this wrench just sitting there not quite straight up, but at an angle. And there it was. I initially tried to get some sort of surgical tool up through the sigmoidoscope, but I couldn't get it over far enough to get around it or get at the thing. So, I took the sigmoidoscope out and knew the angle where this thing was sitting, and took a rounded forceps and passed that up in so that would loop over the top and could get up into the corners. I kind of felt around with that a little bit. And I could feel it touching the wrench. After five or ten minutes of fussing around and manipulating and getting my bearings, I just opened this thing up and I could feel it kind of slide over the wrench, so I closed it and I felt like I had the wrench. I gave it a little bit of a tug to bring it toward the hole and it just fell out on my chest. As I was working they kept asking, "How are we you doing? How you doing?"

I said, "Well, I'm making some progress I think." And then I pulled myself out from under the turbine and I handed them the wrench. They couldn't believe it. I couldn't believe it either. There was a lot of dumb luck involved in having that thing fall out, but I got the wrench around it and skidded it over a to the hole and plunk, it just fell right through the hole. The whole thing took about two hours, after they had worked

on it for two days.

I suspect that I'm the only person in the Navy that's ever sigmoidoscoped a steam turbine. The rest of the story is that the ship was basically headed back to Norfolk. If I couldn't get the thing out, they were going to have to cut a very large hole in the flight deck on down through to the engine room to pull this steam turbine out and replace it with a new unit. We're talking maybe half a year the ship being out of service before they could get it back in and going again.

The other part of that story is that my time onboard at sea would have been shortened a lot if I thought about not getting the thing out because we would have been right back at Norfolk. But I would have tried anyway.

I did get a commendation from the captain which I still have. As I was leaving the ship when my tour was up, I got handed a package. Inside was a plaque with the wrench on one side and on the other side was the clamp that I'd used to get it. So yes, I do still have the wrench and I have the forceps that I used those many years ago. ☸

Plaque given to LCDR Minehan for services rendered aboard
USS America.

Courtesy of Dr. Tom Minehan



The Trouble with Paddy Foot

Immersion Foot in the Vietnam War

"[Immersion Foot Syndromes represent]... the pathologic state which occurs after prolonged immersion in water and is a potentially serious problem. During one 'sweep and clear' operation in the month of December [1965] there were more cases evacuated from the field because of this problem than due to enemy action."

~Capt. Gustave Anderson, MC, USN, 1967

As the Marines trudged through torrential rain, rice paddies, and mud, many began suffering from a painful foot condition leaving them incapacitated for days, sometimes months. The removal of their boots revealed blistered, infected, swollen, ulcerated feet symptomatic of immersion foot syndromes.

By the time the conflict in Southeast Asia came around, immersion foot syndromes were nothing new in the history of warfare. Variations of the syndromes had taken on such colorful names as "trench foot" and "jungle rot." In Vietnam it was sometimes termed "Paddy Foot" and "Wet Foot" by G.I.s and Leathernecks. Its cause was prolonged exposure to wet environments. The severest cases could lead to loss of circulation in feet, gangrene and ultimately amputation and debridement.

Over the previous century, military doctors tried everything from chalk to whale oil to improved foot gear to keep this dreaded ailment in check. Some success was made during the Vietnam War in no small part to an enterprising Navy dermatologist named Capt. Gustave Anderson, MC, USN.

In 1965, at the request of Surgeon General Robert Brown, Capt. An-



Capt. Gustave Anderson, an innovator in the fight against "Paddy Foot."
Images from BUMED Archives

derson deployed to the Naval Station Hospital in Da Nang, South Vietnam to survey the dermatological disease situation. While there he was asked by Lt.

Gen. L.W. Walt, Commanding Officer, III Marine Amphibious Force, to develop a prophylaxis for the immersion foot plaguing his troops.

When he returned stateside, Anderson sought out professional assistance from both military and civilian research specialists and private industry. Anderson determined that the Dow Corning Corporation, a leading supplier of silicone solutions, offered the best area for study. With a medical investigating team from the Naval Field Medical Research Laboratory (NFRML) in Camp Lejeune, N.C., Anderson devised and conducted investigations that demonstrated the feasibility of using a single daily application of silicone as a protective agent.

Pilot field tests utilizing silicone sprays, salves, powders and greases were conducted on volunteers from the 2d Marine Division by NFMRL from July to August 1966 at Camp Lejeune. The tests found that out of the 54 treated subjects with silicone preparation, none acquired immersion foot in five days of a consistent wet environment. Out of 34 non-treated subjects, 98 percent developed immersion foot during the same period.

During his second of tour of duty in Vietnam (November 13, 1966 and January 30, 1967), Capt. Anderson led a team of investigators for operational evaluation of silicone preparation or ointment in combat troops. Anderson and his team demonstrated that through the use of the ointment, three-quarters of the anticipated immersion foot cases were prevented. Researchers also demonstrated that traditional methods of caring for ones feet—airing the feet in the sun or overnight—was advisable in helping to prevent the condition.

Anderson recommended that the ointment be used only when troops



Corpsman removing the boots of a Marine.

were “exposed to a constant wet environment more than 24 hours”; and be used by troops “actively engaged in an operation for only as long as the operation lasts.” Troops not exposed to extended periods in wet environment should not be treated.

The silicone ointment was not without some controversy. Many Marines complained that the original ointment was too “sticky” and “gummy.” The properties of ointment were eventually modified to improve its “cosmetic qualities.”

In his testimony to Congress in 1966, Commandant of the Marine Corps Gen. Wallace Greene called the sili-

cone ointment one of the most significant innovations in use in Vietnam.

On March 9, 1967, Gustave Anderson was awarded the Legion of Merit for his work in helping to keep the feet of thousands of Marines protected from a preventable harm.[ABS](#)⊗



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